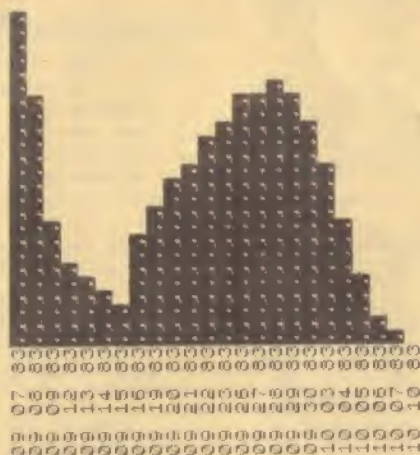


# SYNCHRO — SETTE

THE SUBSCRIPTION MAGAZINE FOR THE SINCLAIR ZX-81 / TS -1000  
MICRO COMPUTERS



## INSIDE THIS ISSUE

THIS MONTH'S PROGRAMS .....	2
EDITOR RAMBLINGS .....	4
THE COMPUTER TUTOR - COMPACTING DATA ....	7
THE FORTH CORNER .....	11
SAVE MONEY ON YOUR MORTGAGE .....	12
LETTERS TO THE EDITOR .....	14

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## This Month's Programs

LOADER - SEPTEMBER 1983

BIG/CHAR EXAM	2K	1
LABYRINTH-8	2K	2
TOLLBOOTH	16K	3
STOCK PROJECTOR	16K	4
TID	16K	5
THURAT	16K	6
BULLETIN	16K	7

There are 7 programs on this month's cassette, not counting the LOADER program which loads in 28 seconds.

The program names are as they appear on the above menu, which is similar to what will appear on the screen when the LOADER program is running.

Each program is recorded only once on each side of the cassette. The first programs that can be LOADED will be of the small size followed by the larger sized programs. For example, this month's cassette has the first two programs recorded as 2K programs. The rest are 16K. The other side of the cassette is a duplicate of the first side.

For you new subscribers who aren't familiar with LOADING procedures for cassette programs, follow these directions:

A - Make sure that the volume setting of the recorder is set at about 90 % maximum.

B - If you have a Bass and/or Treble control on the recorder, make sure the Treble is at maximum and the Bass is at minimum.

C - To LOAD the first program, type in LOAD "" and press the ENTER key on the computer. Then press the PLAY button of the recorder. The load time on the APR/83 cassette is about 10 seconds until the first program begins.

The time needed to load the LOADER program is 39 seconds. When the program is loaded, a list of this month's programs will appear automatically.

Shut off the recorder when the LOADER program is loaded. Any of the listed programs can now be loaded into the computer by pressing the appropriate number on the keyboard and then pressing the PLAY key on the recorder. The loader program loads by searching for the name of the program you want and ignoring any of the other programs it may encounter along the way.

If you want to go directly to a program without waiting, we suggest you first find the tape location of the beginning of each of the programs with your recorder counter. This can be done as you go through the programs the first time, noting the tape location on the counter as each one is being loaded.

If you don't have a counter, approximate the tape position with the fast forward key just before where the program would start, and then LOAD the program with the name of the program using the format LOAD "NAME OF PROGRAM".

Some of our subscribers have told us that they could not get the programs to load by name but they would load with the double quotes. Others have told us that the loader program wouldn't load certain programs. Most have told us that all the programs could be loaded either way. Every customer's cassette is made from the same master tape, so the programs on everyone's cassettes are identical. We feel it is most probably a problem of volume adjustment or recorder design. We have noticed this situation on some of our recorders.

PROGRAMS (all programs this month are self-running except "BANK SHOT").

- program's name has inverse last character if self-running  
RT = run time/LT = load time)

There is an approximate, 7 to 20



second pause between programs

1/2v "BIG CHAR/EXAM" LT = :14 18-27

This program creates characters 8 times normal size by examining the memory locations of ROM starting at decimal 7688. Four characters may be entered per line and then a SCROLL will occur to allow the next line to be entered.

Each character is represented by eight memory locations. Try entering graphic symbols or inverse characters. The result will not be what you suspect.

1/2v "LABYRINTH-2" LT = :22 28-38

The program starts with the <L> cursor at the bottom of the screen. You are to enter a number which represents the difficulty level (<1> is easiest) you want to play at. You might want to start with <0> (BREAK & RUN when ready to restart). This will produce no obstacles but will enable you to get the feel of moving your car through the obstacle course. <1> moves the car left and <0> to the right. Level 2 can be quite difficult and anything higher, almost impossible. If you hit an obstacle, the game is over, the <L> cursor will appear again asking for the next difficulty level.

1/2v "TOLLBOOTH" LT = 1:12 39-47

Perhaps you have heard of computer simulations. This program draws a graphic representation of a Highway Tollbooth Exchange. In the center is a meter that totals the cash collected. Cars pay 30 cents and trucks pay 60 cents. The booths on the left accept coins and the booths on the right have attendants. Trucks always have to go on the right.

The vehicles enter the exchange one at a time and the cars have a 50/50 chance of going left or right. Enter any amount of vehicles you wish and observe the effects.

"STOCK PROJECTOR" LI = 2:17 68-116

Here is a neat little program that can help you analyze stock or bond trends. It can also do the same for sales or any other type of chronologically kept data.

Here's how it works: it is designed to have inputted at least 28 data items (daily stock or bond quotations, weekly or monthly sales figures, etc.). The program will then take any of the data items, starting with the third and ending with the third to last, add to that figure the two data items before it and the two data items after it and divide the total by 5.

This gives what is called a five point moving average. The program now takes the lowest and highest of these figures and plots a bar graph to the screen. It also elongates the distance of the bars to include the maximum amount of screen space.

If we were to use a stock, for example, that fluctuated between 64.00 and 67.25, an actual graph would hardly show any difference between peaks and valleys. By using the moving average to smooth out the peaks and valleys and having the graph chart from the lowest peak to the highest valley and elongating the chart, the peaks and valleys are dramatically displayed.

The observer can now look for trends by the displayed dates. The program will allow 999 data inputs and with the TS-2040 printer, the entire graph can be printed.

Prompt #1 allows the data inputs of which 28 have to be entered before the graph can be displayed. Prompt #2 allows the PEAK/VALLEY search and displays the graph with the printout option. Prompt #3 allows 20 days of data entry to be displayed with the user specifying the beginning day. If less than 20 days of data exist from that date, the remaining days will be displayed. Prompt #4 cancels out all the data so that a new file can be entered. Prompt #5 allows the data

to be saved on tape and prompt #6 allows incorrect data to be edited.

13V "TTD" LT = :58

117-133

Originally titled "THINGS TO DO", this program employs a rather simple concept taken from an idea that was worth to the originator one million dollars. The story is kind of sketchy but here it is anyway.

It seems that years ago, around the turn of the century, a man had achieved the height of riches and power. He alone controlled an empire that was diversified to the point where it would rival any major corporation today.

One day, he was being visited by a friend who asked him about his business. The man replied that he found it extremely difficult to organize all the things that had to be done to keep his empire operating. He did not have the time to delegate authority or teach any of his employees the necessary tasks that would allow him any time for himself. He found it faster and easier to do the necessary things on his own. He spent many hours at work and had little time for his family and friends.

He said he would pay anything to be able to find a way to organize his business where he could have some time to himself.

The friend took this as a challenge and told him he believed he had the answer. He explained his organizing concept to him and told him to use it for a period of time and then pay him what he thought it was worth.

Some time later the friend returned to see how the man was doing. The man said that he had used the idea and handed the friend an envelope. Inside, he said, was what he felt the idea was worth.

Inside was a check for a million dollars!

The man told his friend that for the first time in years, his business was organized. He had time for family, friends and social events. Here is the idea that was given to him:

On a sheet of paper, write down all the things that you have to do, to the best of your memory, whether they are paying bills or taking out the garbage or anything else. Now, scan the list and decide which one of these items is most important or has to be done first. Write this item down on a second sheet of paper, number it "1" and cross it off on the first sheet. Now scan the first sheet again and of the remaining items, decide which is most important. Write it down on the second sheet under the first item, number it "2", and cross it off the first list. Repeat this procedure until all the items have been transferred.

Now, throw the first sheet away, and pursue the fulfillment of the first item. When that is accomplished, cross it off the list, go on to the second item, etc. Do not attempt to skip an item unless the situation for that item demands a time delay.

In the "TTD" program, you can enter or add up to 22 items (prompt #1), restructure the order or set priorities of these items (prompt #2), delete these items as they are accomplished (prompt #3), clear them all out to start a new file (prompt #4), see or print the items (prompt #5) and save them on tape (prompt #6).

I don't expect to see any checks in the mail for a million dollars but any donations will be graciously accepted.

"THWART" LT = 6:04

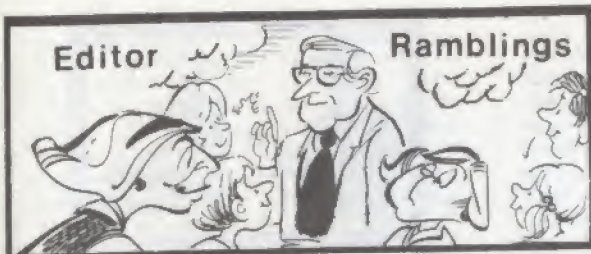
138-238

This game gives a fairly challenging contest where either the user or computer can move first. Played on a 4 x 4 grid, the combatants take turns dropping their



## Editor

## Ramblings



-----  
TS-1500/2000 RELEASES  
-----

The most reliable information we have regarding the expected date of availability is that the TS-1500 will be released around September 15th, 1983 and the TS-2000 around October 15th, 1983.

Supporting companies should find this good news. Look for major TV and publication advertising starting soon with more emphasis on the 2000.

Also, look for some pleasant surprises in the 2000. A program such as:

```
10 FOR N=1 TO 10
20 PRINT N
30 NEXT N
```

can be written as:

```
10 FOR N=1 TO 10 :PRINT N :NEXT N
```

In other words, command formats need no longer be separated by line numbers. You can put as many command formats into a line as that line can hold. A certain logic unveils itself as new programming techniques unfold. A sample would be:

```
1000 IF A>B THEN GOSUB 1500: PRINT
      "A IS LARGER THAN B"
```

In this example, if "A" is larger than "B", a truism occurs. Subroutine 1500 will be executed and the message "A IS LARGER THAN B" will be displayed. If "A" is not larger than "B", the entire line will be ignored. This allows a whole bunch of command formats to be executed if a truism occurs from the same line.

Have you ever had to set

a whole bunch of variables equal to numbers? On the 1000, a program line has to be used for every variable. On the 2000, the following line would be legal:

```
10 LET A=5:LET B=7:LET
   CN=38:
   LET A$="HELLO":LET
   ZN$="GOODBYE"
```

That's right, double letter string variables are allowed, making for 676 potential string variables rather than the 26 limit on the 1000. The strings are dimensionalized differently, too. On the 1000, a variable might be dimensioned as "A\$(100,10)" where 100 inputs can be made of a maximum of 10 characters each. On the 2000 "A\$(100)" will do the job. Each "A\$" string will self-dimensionalize to the amount of characters inputted.

Want to save a file of data? With the 1000, data and program are saved together. What if you write another program that could use the same data? With the 1000, you have to enter the same data over again. Not with the 2000. You can save just the data on tape and recall that same data with another program. Music, sound effects and fast color graphics make this an exciting machine.

One source that has tested it says that it is superior to the Commodore 64. We have a 64 and it is a lovely machine so we can hardly wait to see the 2000.

-----  
TS-1000 MARKET ALMOST NON-EXISTENT  
-----

Sales of TS-1000s have dropped to extremely low levels. Almost all major stores have dropped the 1000 from their inventory or are clearing their stock by selling them for as little as 29.95. This is mostly due to the premature announcement of the 1500 and 2000 and that relationship with the discounted Commodore 64 (\$199 at many stores). One store sells thirty 64s for every 1000

It looks like by year's end that the 2000 and 64 will represent the main contenders in a battle for the low-end market. Both have small-mid business capabilities. A price war will probably ensue with both dropping below the \$150 level. It is not hard to find a dealer, even now, that will sell you a C-64 computer with a 170K storage disk drive and graphics dot-matrix ink printer for under \$800. This price could drop by as much as 35% within 6 months.

Meanwhile, supporting companies of the 1000 are suffering from lack of sales of related software and hardware products. Look for the market to improve slowly toward the end of September, and more so soon after the 2000 becomes available.

#### ----- CONVERT 1000 TO 2000 -----

Have all those neat ZX-81 or TS-1000 programs that you want to put into your TS-2000 when you get it? Do you envision sitting in front of your 2000 for many evenings typing in each program?

Maybe you won't have to! An English company offers a software program that enables ZX-81 BASIC or MACHINE CODE programs to be loaded and converted into the SPECTRUM (Sinclair's European version of the TS-2000) for 10 pounds (about \$18). For more info or a free catalog, contact:

East London Robotics  
No 11 Gate  
Royal Albert Dock  
London E 16  
Tel:01-474 4430

Thanks to Albert Pela, Jr. of Saudi Arabia for this bit of information.

#### ----- 2040 PAPER AVAILABLE -----

For all of you asking where to

get paper for your TS-2040 thermal printers, Kopak has plenty in stock. Blue print on white (#DR1-401) is \$7.80 for 4 rolls or \$46.80 for 24 rolls. Black print on white (#DR#2-402) is \$9.15 for 4 rolls or \$54.90 for 24 rolls. Kopak also has a large number of software and hardware items. A 32 page catalog is available by writing:

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Union City, NJ, 07087  
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Attn: Robert Schiller

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#### ----- TAS BAM - THE FIRST -----

I knew it would eventually happen! KEYBOARD, a bi-monthly Users' Group newsletter, is printed almost entirely with the TS-2040 printer. It is a neat and very "homey" publication describing news and events around the Tampa Bay area. An interesting eye catcher is the use of inverse characters and graphic symbols to accent the copy. If interested, send \$15 for a year's subscription to:

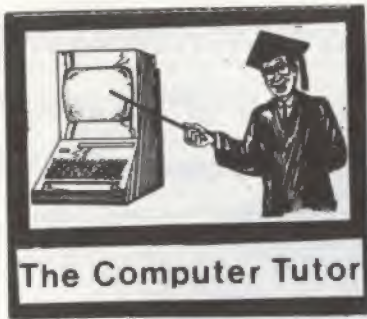
Tas Bam Users' Group  
PO BOX 644  
Safety Harbor, FL, 33572

#### ----- DICK TRACY INSPIRED? -----

A Pennsylvania State University professor proclaims that police of the future may have wrist-computers to enable them to check the past history of crime-ridden areas. This could give the officer the edge between life and death by giving information about that location for the past six months.

Most U.S.A. departments employ 10 to 15 people but do not or will not





## Compacting Data

Good morning, Class! Today's session will involve the techniques of compacting data or, in other words, putting data into the least amount of memory space possible. Consider a situation where you want to enter data into the computer for a customer mailing list.

You would want to enter the customer's company name, the customer's name, the company address, the town or city, the state, the zip-code, maybe the phone number and possibly a remarks entry.

A string variable would have to be assigned to each of these entry items and dimensionalized accordingly.

On the TS-1000, care has to be taken to dimensionalize each variable to allow the maximum amount of characters for that input. Let us just look at names. Let us say that the smallest company name is the "AL CO." which occupies 6 total memory or character spaces. However, the largest name is "UNITED AMALGAMATED INDUSTRIES" which occupies 29 character spaces. Let us say that the average amount of character spaces used by any of these name entries is 13 characters.

If we had 100 customers and we wanted to allow "UNITED ..." to be entered in full, we would have to format our dimension statement as DIM N\$(100,29). Any amount less than 29 would chop off that many characters from the left of "UNITED ...".

The same holds true for any of the other variables. When "AL CO." is entered, 23 memory spaces are entered. Since the average entry occupies 13 characters, 1,600 memory spaces are wasted. Eight other variables are dimensionalized for data entry. Let us say that each one wastes an average of six memory spaces ( $8 \times 6 \times 100$ ). We have 4800 bytes along with the original 1600 for a total of 6400 wasted bytes.

This, of course, is a goodly sum. If we are smart enough (and sneaky), we can tone this down to where there is only one wasted byte per variable. Enter the following program.

```
10 PRINT "NAME?"
20 INPUT N$
30 PRINT "ADDRESS?"
40 INPUT A$
50 PRINT "CITY/TOWN?"
60 INPUT C$
70 PRINT "STATE?"
80 INPUT S$
90 PRINT "ZIP CODE?"
100 INPUT Z$
200 LET B$=N$ + A$ + C$ + S$ + Z$
300 PRINT B$
```

If we RUN this program, let us enter the following data for purposes of example:

```
"JOHN JONES","123 45TH ST",
"ANYTOWN","IL","66666"
```

You will notice that after the last entry, the screen will display:

```
JOHN JONES123 45TH STANYTOWNIL66
666
```

This, of course, is the most compact format we can get and uses only 35 bytes of memory. Unfortunately, there is no technique to separate the individual data items.

All is not, however, lost! Separators can be inserted in between the variables which can be used to break the main variable apart. Change line 200 to read:

**GENERAL SYSTEMS CONSULTING**  
 2312 Rolling Rock Drive  
 Conley, Georgia 30027

  
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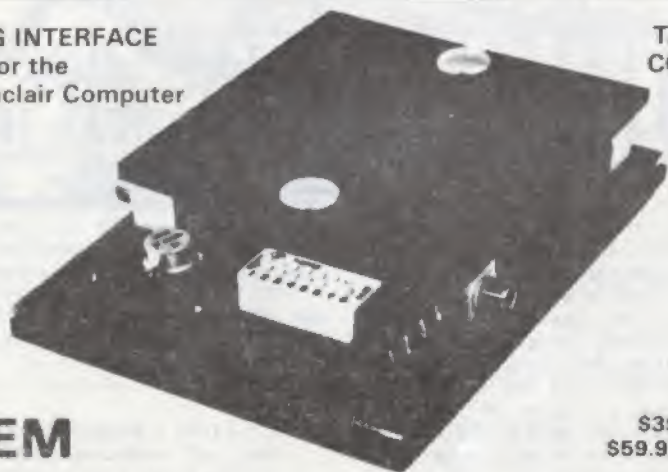
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# ANALOG INTERFACE for the Timex/Sinclair Computer

# TAPE SIGNAL CONDITIONER



# VOTEM

**\$39.95 (Kit)**  
**\$59.95 (A & T)**

VOTEM is a complete package consisting of hardware and software that enables your computer to measure, display and record "real world" analog signals. Your computer can monitor any physical phenomenon (pressure, light, temperature, etc.) that can be represented by a DC voltage. A probe is provided for air and liquid temperature measurements.

Your computer becomes a "smart" digital voltmeter and thermometer with storage capability. Just think of the possible applications. Use VOTEM and your computer to monitor the temperature in a home energy conservation project to save money and possibly qualify for an energy tax credit on the entire system.

VOTEM also amplifies and cleans up the tape signal for reliable program LOADING. The tape signal conditioner circuit will allow you to LOAD tapes with a lower volume setting on your tape recorder, resulting in less noise and more dependable LOADs. You will be able to LOAD from tapes which would previously not comply.

VOTEM requires no modifications to your computer and does not use the computer's expansion connector, leaving it free for other add-ons such as the memory pack and printer.

At only \$59.95 (assembled and tested), VOTEM is the world's most cost effective analog interface. For an even better bargain the VOTEM kit is only \$39.95. (Requires soldering and appx 2 hrs.) VOTEM comes with a detailed 35-page manual. The manual may be purchased separately for \$5 pp and applied to first purchase of a VOTEM unit. If you are not satisfied with VOTEM return within 15 days for a full refund. (Does not apply to kits.)

**Send check or money order plus \$3 for shipping and handling.**

## VOLTAGE MEASUREMENT PERFORMANCE

Resolution 0.000044V (better than 14 bits.)  
Accuracy (note 1) +/- 0.2%  
Input Resistance 250 Megohms  
Range (note 2) 0 to +1V (without divider network)  
Linearity 0.1%

## TEMPERATURE MEASUREMENT PERFORMANCE (specified in degrees C)

Resolution better than 0.05  
Accuracy (note 1) +/- 0.5  
Range -25 to +125

## POWER SUPPLY REQUIREMENTS (note 3)

Operating Voltage +8V to +15V (unregulated DC)  
Current Consumption 25mA (typical)  
15mA without LED

## COMPUTER REQUIREMENTS

Timex TS-1000 or Sinclair ZX81. Will also work on ZX80 (w/ BK-ROM). Basic measurements and operations require only 1K of RAM memory. Instructions and Z80 source code driver routine are provided for adapting to any Z80 based computer.

## OTHER FEATURES

- \* Schmitt trigger conditioner circuitry for tape signal
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- \* Easy-to-follow 35-page manual can be purchased separately

**Note 1:** All calibration is done in software. The absolute accuracy of VOTEM will depend mainly on the choice of parameters and conversion factors used in the software. If the calibration procedures provided with VOTEM are followed then the accuracy should be as good or better than that specified above.

**Note 2:** The input voltage range of 0 to +1V can easily be expanded with an on-board resistor voltage divider network.

**Note 3:** VOTEM can be powered from the Timex/Sinclair computer's power supply. The VOTEM unit provides a power-in and power-out receptacles and also includes the proper connecting cable.

## Down East Computers

P.O. Box 3096  
Greenville, N.C. 27834

```
200 LET B$=N$ + "*" + A$ + "*"
  + C$ + "*" + S$ + "*" + Z$ + "*"

```

If we execute the program again (use GOTO 200 rather than entering the data from scratch), the following is displayed:

```
JOHN JONES*123 45TH ST*ANYTOWN*1
1*666666*

```

This uses up a total of 40 bytes, five more or one extra byte for each of the five variables. Much more efficient than the 6 average wasted bytes we discussed earlier. It isn't hard to calculate that with a nine entry/100 customer program, we would only be wasting 900 bytes as opposed to the 6400 utilizing the old method - a savings of over 5K of RAM memory. This could double the amount of customers to be entered into your file in a 16K machine.

Now we have to have a method of breaking the variable "B\$" apart to display the separate entries. Easier done than said. Delete line 300 and enter the following lines:

```
210 CLS
220 LET Q=1
230 FOR N=1 TO 5
240 GOSUB1000
250 NEXT N
260 STOP
1000 FOR I=Q TO LEN B$
1010 IF B$(I)="*" THEN GOTO 2000
1020 NEXT I
2000 PRINT B$(Q TO I-1)
2010 LET Q=I+1
2020 RETURN

```

The variables are now all neatly separated from the main variable B\$. The gentleman in the rear has his hand up! Yes, Sir?

He says that we have been shown how to separate undimensionalized variables and wants to know how to do it with variables that are dimensionalized.

First of all, let me say that asterisks (\*\*) are not the best devices to use as separators. We may have an entry that has an asterisk as part of its content. Or, we may have a situation where we need more

have a situation where we need more than one type of separator, particularly if a fast search is necessary.

There are many characters in the Sinclair Code library that are not accessible directly from the keyboard except through the CHR\$ function. Examine the CHARACTER SFT table in your manual and you will find 50 of these unused codes, from 67 to 111 and 122 to 125. This does not mean that you cannot use them. Line 200 could be changed from:

```
200 LET B$=N$ + "*" + A$ + "*"
  + C$ + "*" + S$ + "*" + Z$ + "*"

```

to read:

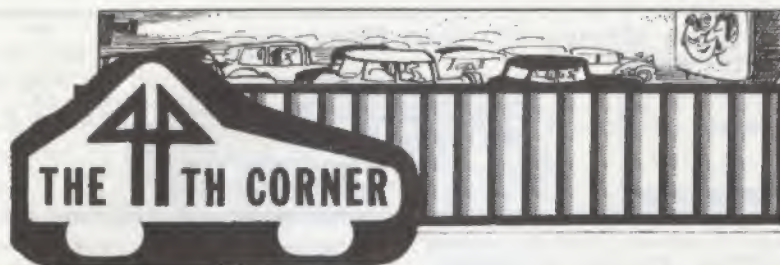
```
200 LET B$=N$ + CHR$(67) + A$ +
  CHR$(68) + C$ + CHR$(69) +
  S$ + CHR$(70) + Z$ + CHR$(111)

```

A routine could be written to identify that the characters between the code characters 67 and 67 represent the address.

The code numbers are immaterial so long as they are classified as unused. In answer to the gentleman's question, consult the August/83 issue, page 4 and read the article about the "MINI DATABASE" program. Look at the listing. This program needs no dimensionalizing and creates a single string variable that it keeps tacking data onto. This happens between lines 1000 and 1430. Lines 4000 to 4830 allow a keyword search that will allow any set of data items to be located and extracted. It is weak as far as data base programs go but it sure is efficient when it comes to memory conservation. Routines could be added to segment the main string variable into even sections. This would use memory space, both for the empty spaces in the unused portions of the segments and for any extra routines to be written such as a sort routine. However this way, a sort routine could sort all the data items while they were still contained in the variable. The main variable would not have to be dimensionalized and some memory would still be saved.





One of the hardest things for me to find was a method of using the FORTH language to perform simple calculator functions through a written program. The logical operators (+, -, \* and /) would allow direct calculations such as:

```
2 5 + . <7 displayed>
7 15 * . <105 displayed>
```

These types of calculations would take the first two numbers, separated by an empty space, and perform the function designated by the logical operator that followed them and display the answer as directed by the period.

This type of calculation could be executed directly from the execution (lower) screen or from a program line written on the console screen and then executed from the execution screen.

To write a program that would allow numeric variables to find the totals was something else. A program in BASIC to perform the addition feat would be as follows:

```
10 PRINT "ENTER FIRST NUMBER?"
20 INPUT A
30 PRINT "ENTER SECOND NUMBER?"
40 INPUT B
50 PRINT A+B
```

It would not be too difficult to write additional programs or expand on this program to include the other logical operators. All four functions can be combined in a single FORTH program listing as follows:

```
0 ( MATH PROGRAM )
1 : READ , " ? " S0 ># DROP ;
2 0 VARIABLE A
3 0 VARIABLE B
```

```
4 : A1 ." ENTER FIRST AMOUNT " READ
A ! ;
5 : A2 ." ENTER SECOND AMOUNT " READ
B ! ;
6 : ADD EOFF CLS A1 A2 A @ B @ + .
;
7 : SUB EOFF CLS A1 A2 A @ B @ - .
;
8 : MUL EOFF CLS A1 A2 A @ B @ * .
;
9 : DIV EOFF CLS A1 A2 A @ B @ / .
;
```

Once it is compiled (CPL from the execution screen), lines 6 thru 9 will perform the calculations. You might want to leave out the EOFF command until you are sure the syntax (mistakes) is correct in the listing. Also, do not press ENTER after the last character is entered on the console screen. Otherwise the first line will be scrolled up off the screen and be lost. Use SHIFT/EDIT to enter the execution screen.

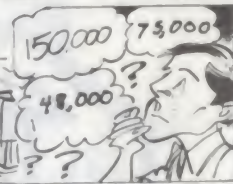
If you have been working with FORTH, you probably know that it is very unforgiving regarding improper program entry. Certain commands become unoperational and the cursor may refuse to blink if an incorrect program is attempted to be compiled.

ADD will add, SUB will subtract the second number from the first, etc. These are actually four different programs but all use the same elementary routines except for the logical operators.

Lines 2 & 3 initialize the variables A & B to be equal to 0. Line 1 defines the command READ to be a device like BASIC's INPUT command. The characters following the " ? " store the keyboard entry on a stack momentarily and then

# How To Save Money On Your Mortgage

A Review Of  
BOSS  
Package #117



This package, #117, from Synchro-Sette has two programs of which the second is usually of most interest. If you find yourself in the following categories, I would urge you to get this package:

- TERM 25 YEARS OR MORE
- DOUBLE DIGIT INTEREST

The second program on the tape is called "PREPAYMENT". Most states make it illegal for a lending institution to penalize the mortgagee who wants to pre-pay a mortgage loan.

What this means to the mortgagee is that if he or she wants to put extra money against the principal, the lending institution cannot charge him or her any money for doing so.

You are probably wondering if pre-payment can make that such of a difference. I assure you it can, particularly in this day of double-digit interest rates and 25 to 30 year maturities.

I have asked people how much they thought their mortgage maturity would be shortened, that is, how many less years would they have to pay if they increased their payments by 5% or 10%

Most people said they thought with a 30 year mortgage and a 15% to 17% interest rate, they would save 2 or 3 years.

I then asked them how much money would they think that they would save with a 5% to 10% increase.

I was usually told at the most a 10% to 20% savings off the total amount.

Well, get ready to be surprised if this is what you believed. A 5% increase in monthly payments of a

mortgage of \$75,000 with a 29 year maturity at a 15% rate will save the owner over 13 years of payments and over \$100,000.

That's right - instead of having a 29 year mortgage, it is now paid off in less than 19 years and the money saved is more than the original loan.

What would that loan cost you if you paid it off the way the bank wanted you to pay it? The result may startle you.

The program is simplicity itself to use. It asks you for only three inputs:

- 1 - AMOUNT OF MORTGAGE
- 2 - INTEREST RATE
- 3 - TERM OF MORTGAGE

Someone might want to convert this program to ask for the amount of months till maturity and then show the listing by the month rather than by the year.

The program then displays 5 columns. The first column represents the amount of years needed to pay off the mortgage at the payment rate as shown in the second column. The third column shows the EFFECTIVE INTEREST RATE. This is not the true mortgage interest rate as if you were to RUN the program using this interest rate and maturity period and would expect to see the same figures from that point on. Rather, it is calculated to be the rate that would occur from the proportions of the original loan against the total that would be paid using the corresponding monthly payments and balancing that against the original interest rate.

Although not the same, it should be close and is actually a more practical rate in terms of visualizing how pre-payment can also



amount per month needed to achieve this goal and the last column shows how much money would be saved if the corresponding extra amount from the fourth column were applied.

Sorry if it seems that we are doing this review backwards, but we will now look at the first program, "MORTGAGE ANALYSIS".

Ever wonder how much money the bank gets from you when you are paying your mortgage according to their rules?

Quite a bit! For example, let's say that you were buying a house in today's market for \$100,000 and you got a 30 year mortgage at 16% interest (I hope you could get it lower but this was about average in 1982).

Your monthly payments for the principal (money to be subtracted from the loan) and for the interest (the money the bank gets to keep) would be \$1,344.75 per month.

How much of that payment do you think goes against the principal? Would you believe that during the first year, less than 1% (from 11.42 the first month to 13.29 the 12th month) is applied against the principal?

And what happens to the other 99 plus percent? That's right, the bank keeps it. In other words, of the \$16,137.00 you pay to the bank, it keeps about \$16,000 of it.

Sounds crazy but it's true. These three figures pretty much represent what an average home goes for these days (June/82) in the U.S.A..

The bank would get all of their money back in about 6 to 7 years and the rest, less their costs, is gravy.

The majority of the principal however, does not get paid until approximately the last 6 to 7 years of the term.

In other words, the bank gets the majority of their money before inflation has had a chance to devalue its purchasing power.

Fortunately, in most states, lending institutions by law cannot penalize the mortgagee for pre-paying the loan, as long as the lending institution is notified that excess in the payments are to be applied against the unpaid principal and NOT TO BE HELD IN ESCROW for taxes or insurance.

In this program, it will ask PRINCIPAL. That is the amount of the loan, such as \$100,000 in the example.

It will then ask PERIODS. This is the amount of months left in the loan. For 30 years, you would enter 360. 29 years would be 348, etc.

It will then ask for INT. RATE. That would be the interest rate such as 16 (not .16).

If you have a printer, you can answer "Y" to the HARD COPY prompt and you can get a printout, if you like, of the total or partial list of month's data.

These two programs have been effectively used by individuals to save tens of thousands of dollars off their mortgage and give them an insight as to how mortgages work.

The calculating powers of the little Timex are surely appreciated with programs like these. HOME MORTGAGE #117 sells for \$14.95 (less 10% for subscribers) from Synchro-Sette.

#### (EDITOR RAMBLINGS CONT.)

use computers due possibly to an anxiety toward them. Many of today's computer enthusiasts, however, are children who in 10 years may enter police work. This stigma should cease to exist.



Dear Ed,

In the May/83 issue of another magazine, there was an article called "A SINCLAIR QUICK FIX". It has a machine code routine in it that is supposed to give you the ability to write and read data tapes.

After three tries, I finally got it all entered correctly - but when I tried their test program at the end of the article and tried to save dummy data, nothing happened.

Have you seen this article or have you had any other inquiries about it?

Also - do you know of anyone taking advance orders for the TS-2000 and where can I get a TS-2040 printer?

George Lipscomb - New York

Dear George,

Yes - I have had many inquiries about the article you refer to - all with the same problems you have had.

We, ourselves tried it with very limited success. We could only get the data to reload about 10% of the time. Sometimes the data would reload OK, sometimes the reloaded data would be distorted or partly

missing but most of the time, the data reload attempt would just bomb.

I think it saves the data at a different baud rate (speed) and this might complicate the reloading effort.

SIMPLY SINCLAIR, BOX 5, Woodbridge, VA, 22194, (703)690-3798 is taking advance orders for the TS-2000 and is selling the 2040 printer - Ed.

Dear Ed,

Noted with interest the letter in the August Issue from J.W. in which he was having trouble with graphics being scrambled in the GRAN MARQUEE program.

I also had the same problem in this and another program and found that it was caused by the 2040 printer being connected. Disconnecting the printer made them work properly. Hope this info may be of some help.

Fritz Conrad - Port Angeles, WA

Dear Ed,

The following modifications to SYNTAX enables it to drive the CAT P40 printer. Enter the following lines:

```

399 GOTO 100
500 IF LM=0 THEN LET S$=""
510 IF LM=1 THEN LET S$=" "
      (one space)
520 IF LM=2 THEN LET S$="  "
      (two spaces)
530 IF LM=3 THEN LET S$="   "
      (three spaces)
540 IF LM=4 THEN LET S$="    "
      (four spaces)
550 IF LM=5 THEN LET S$="     "
      (five spaces)
560 LET P$=S$+B$
570 RAND USR 8192
580 RETURN
4321 GOSUB 500
4411 GOSUB 500
  
```



4452 LET P\$=" "  
(1 space)  
4454 RAND USR 8192

Let me know if you would like any other programs adapted to drive the P40 printer.

Cordially - Terry Bavousett -  
Lubbock TX

Dear Fritz & Terry,

Thank you both for the info. We have had inquiries in both areas. A shame about the printer hook-up/distortion problem. This just about eliminates using the program to quickly print out large characters.

Regarding printer output, I would like to find out if anyone has come up with a fix for the line-skipping effect that occurs on 80 column printers when they are asked to print more than 63 characters per line.

Print-out techniques concerning the conversion of PRINTs to LPRINTs will be the topic of a future tutorial - Ed.

#### (PROGRAMS CONT.)

markers into the lowest available square by entering the letter (A to D) of the column. Three in a row, up/down, sideways or diagonal are needed for either side to win. The program offers the appropriate sarcastic remarks and is harder to beat if the computer goes first.

"BULLETIN" LT = 2:23 RT = 9:52

Our bi-monthly Bulletin Board Program. "P" will PAUSE the scroll, "B" will move it backward and "F" will move it forward again.

#### (FORTH CONT.)

transfer the number into either variable A or B with lines 4 and 5.

The @ in lines 6 thru 9 actually attach the correct number to the variables A & B where they are coupled with the proper mathematical operator to give the correct result. Without the @ in the formula, all sorts of incorrect answers will result.

In other FORTH news, Soft-Magic is coming out with a word processor for the TREE FORTH chip. We hope to do a review of it in this column soon.

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